

### CLASS EXERCISES

Given  $f(x) = 2x + 4$  and  $g(x) = 3x$ , find each value.

- |           |            |            |            |
|-----------|------------|------------|------------|
| 1. $f(1)$ | 2. $g(0)$  | 3. $f(-2)$ | 4. $g(-3)$ |
| 5. $g(4)$ | 6. $f(-5)$ | 7. $g(-2)$ | 8. $f(0)$  |

Given  $f(x) = 2x + 1$  and  $g(x) = 4x$ , find each value.

9.  $g[f(-3)]$    10.  $f[g(-3)]$    11.  $f[g(0)]$    12.  $g[f(k)]$    13.  $f[g(k)]$

### PRACTICE EXERCISES



Use technology where appropriate.

Evaluate each pair of functions for  $x = -1, 0, 2, a$ .

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|--|---|
| 1. $f(x) = -3x, g(x) = x + 2$          | 2. $f(x) = 4x, g(x) = x - 3$            |
| 3. $f(x) = x^2, g(x) = x + 5$          | 4. $f(x) = x^3, g(x) = x - 2$           |
| 5. $f(x) = 3x^3 + 1, g(x) = 2x$        | 6. $f(x) = -x^2, g(x) = -2x$            |
| 7. $f(x) = 2x^2 + 4x - 1, g(x) = 3x^2$ | 8. $f(x) = 3x^2 + 2x, g(x) = -x^2 + 2x$ |

Evaluate  $g[f(1)]$ ,  $g[f(-2)]$ , and  $g[f(0)]$  for each pair of functions.

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| 9. $f(x) = -3x, g(x) = x + 2$        | 10. $f(x) = 4x, g(x) = x - 3$      |
| 11. $f(x) = 5x, g(x) = x + 5$        | 12. $f(x) = -4x, g(x) = x - 2$     |
| 13. $f(x) = 2x^2, g(x) = 2x$         | 14. $f(x) = -x^2, g(x) = -2x$      |
| 15. $f(x) = 2x^2, g(x) = 3x + 2$     | 16. $f(x) = 3x^2, g(x) = -x$       |
| 17. $f(x) = 2x, g(x) = -3x$          | 18. $f(x) = -3x, g(x) = 4x$        |
| 19. $f(x) = 2x + 1, g(x) = 4x + 2$   | 20. $f(x) = 3x + 5, g(x) = x - 1$  |
| 21. $f(x) = -3x + 5, g(x) = -2x + 1$ | 22. $f(x) = 5x - 2, g(x) = -x - 1$ |
| 23. $f(x) = x, g(x) = 2x$            | 24. $f(x) = 2x, g(x) = 3x$         |

Evaluate  $f[g(x)]$  and  $g[f(x)]$  for  $x = -2, 0, 1, k$ .

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|---------------------------------------|--------------------------------------|
| 25. $f(x) = x^2, g(x) = x + 1$        | 26. $f(x) = 2x^2, g(x) = x - 2$      |
| 27. $f(x) = 2x^2, g(x) = 2x + 3$      | 28. $f(x) = 3x^2, g(x) = 4x - 1$     |
| 29. $f(x) = 3x^2, g(x) = -2x - 2$     | 30. $f(x) = -2x^2, g(x) = -2x + 5$   |
| 31. $f(x) = x^2 + 2x, g(x) = -3x + 2$ | 32. $f(x) = -x^2 - 4, g(x) = 2x + 3$ |

Find  $(g \circ f)(x)$  and  $(f \circ g)(x)$  for each pair of functions.

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|-------------------------------|-------------------------------|
| 33. $f(x) = x^2, g(x) = 2x$   | 34. $f(x) = 2x^2, g(x) = 3x$  |
| 35. $f(x) = 3x^2, g(x) = -4x$ | 36. $f(x) = -x^2, g(x) = -2x$ |